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ABSTRACT

This study is aimed at clarifying the objectives of the Technion Libraries' Systems, both within the Technion and as a national information resource, by defining the structure, organization, and methods to achieve these objectives. It considers Technion's future plans and current library practices as based on reports on the system, Technion documents, talk with library staff, faculty, and others having an interest in the library. Recommendations include: (2) the strengthening of relationships between the library system and other parts of the Technion; (2) the use of such management approaches as MBO (management by objective), PPBS (planned programmed budgeting system), O.D. (organizational development), and P.T.R. (purpose targets results); and (3) consideration of the use of a computer, of miniaturization, and of nonprint media. (DAG)

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TECHNION LIBRARIES SYSTEMS STUDY

REPORT : June 1976

By: Pauline Thomas A.L.A., M.I.A.M.

Consultant

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ABSTRACT

"The allocation of a fixed budget represents a set of decisions about which functions should be fulfilled, and thus which objectives should be met and which users should be satisfied at the relative expense of other objectives and users."

Raffel,J.A. and Shisko,R.: Systematic Analysis of University Libraries. MIT Press, 1969.

The functions of the Technion Libraries System, some of the problems to be considered in organising the libraries of the Technion to fulfill these functions, and the provision of operational support for the activities necessary to provide services to the various groups of the Technion community are discussed in the report. Recommendations for action are also presented within the context of their relationship to the total systems design.

The major recommendations for action, in the light of the complex problems explored in the Systems Study, and the position papers on such issues as revised statutes, centralisation versus decentralisation, and a development plan for the libraries, that have proceeded in parallel with the Study, include the following:

- that the experimental pilot project, partially funded by the grant made available through IBM, should address the development of an integrated computer-assisted library system by designing and implementing computerised acquisitions procedures

- that the Systems Analysis and Research team needed to carry out the pilot project, should continue to work on the development and implementation of the integrated system in planned stages, and should additionally be responsible for the implementation of the other recommendations in this report.

- The Technion Libraries System must provide its users with the most effective and efficient services possible within the constraints of financial and manpower resources.

- There is a great deal of talent and professional expertise within the libraries. The task of mobilising

and coordinating individual efforts to benefit from immediate streamlining of procedures within an overall development plan is essential. The continuing work of the team is therefore important not only as a tactical measure, but also as a vital factor in the development of an integrated system from the present fragmented elements of a potentially rich and dynamic information service to the Technion, and to Israel.

The strengthening of the Technion Libraries System, and particularly the establishment of a systems analysis and research team within the libraries would contribute not only to more effective support for the educational and research activities of the Technion, as its primary endeavour, but would also allow it to contribute to these activities within its own area of specialisation, both within the Technion and on a national level.

Research in library and information science has rapidly become accepted as a required element of both educational and commercial research and consultancy activities in many countries, drawing support from governments, parent institutions, educational authorities, industry and professional societies.

The systems development and research activities of the Technion Libraries would therefore be of immediate national interest, and could potentially enhance the quality of both local and national information service in Israel.

that the development of an integrated Technion Libraries System should be actively pursued and that organisational issues within the Elyachar Library and between this part of the Technion Libraries System and other parts (viz. Faculty and Departmental Libraries) be tackled within the framework of an analytic approach developed specifically for, or adapted to, library management, such as the MRAP (Management Review and Analysis Programme) of the Association of Research Libraries, Office of University Library Management in the U.S., OR Management by Objectives and Organisation Development techniques as implemented in English educational type libraries by the present systems analyst.

that existing links with other departments of the Technion, such as the Technion Foundation for Research

and Development and the Center for Instructional Improvement, and the relationship between the Technion and its Library and Information Services be strengthened, and improved by such endeavours as:

mounting an in-depth user study

taking immediate action on liberalising and rationalising loan policies

developing the existing Technical Information Service (on a paying basis), in particular exploiting and coordinating the present scattered subject expertise already available within the Technion Libraries System, in consultation with the Industrial Liaison Officer of the Mosad

extending the present innovative efforts at library education initiated by the tape-slide guide for library users under development with the C.I.I. staff, into a planned programme of education for all users, in cooperation with the C.I.I. and the Deans of the Faculties

inaugurating a planned programme of Library publications, in accordance with the functions and qualities of other Technion publications and using the experience gained in APL text processing not only in preparing these publications, but also in developing a pilot information service using the "Electronic Conferencing" techniques developed at the Institute of Technology, New Jersey, U.S.A. In particular, the renewed publication of the guide to Hebrew literature should be undertaken.

TECHNION LIBRARIES SYSTEMS STUDY

SUMMARY OF METHODOLOGY

The Systems Study is aimed at:

clarifying the objectives of the Technion Libraries' Systems, both within the Technion and as a national information resource;

defining an appropriate structure, organisation and methods to achieve these objectives effectively and efficiently.

It must therefore include a consideration of the Technion's future plans in relation to its teaching and research functions; a review of present library practice; design for optimising and building on the strengths of the present system. In particular, it should emphasise and make explicit the present implicit interactions and cooperations within the Technion, and relate to shared concerns such as service to industry and the programme of Instructional Improvement.

Recommendations include:

the strengthening of relationships between the various parts of the Technion Libraries System and between the System and other parts of the Technion

the use of such management approaches as MbO, PPBS, O.D and P.T.R.; adapted to the specific organisational development requiremenmts of the Technion Libraries System.

consideration of the use of a computer and other relevant technologies such as miniaturisation and non-print media.

In the process of analysing the system, I have:

studied reports on the system and other Technion documents;

talked to some of the staff of the Elyachar Library;

met with faculty librarians, and with their chosen representatives;

talked with some of the other people in the Technion who have a particular interest in the provision of Library and Information services.

Professor Simon introduced me to the faculty librarians at a meeting at the beginning of the Study, and we talked to them about some of the problems the libraries of the Technion were facing, and the need for developing a planned and integrated service. They formed six groups of libraries according to subject area interests and reflecting the pattern of informal cooperation already in existence, and appointed representatives.

The groups then met separately to discuss the subjects introduced at the first meeting, and their hopes for the future, which they summarised in a report "Views of the faculty librarians and departmental librarians on a future General Technion Library System". The report covered such topics as general system organisation; division of responsibility between the faculty and central libraries, the budget, communications, services to Technion users and to external users of the system, and a summary of the present most serious problems of the faculty libraries.

There are, of course, divergent opinions concerning many of the issues discussed, and these are included in the report. However, an encouraging degree of unanimity emerged concerning the future potentials of a more integrated Library System within the Technion, and three Working Parties were set up to deliberate on possible solutions in three of the major problem areas: the relationship between the parts of the system, and the development of rationalised loans and acquisitions policies.

The areas which the librarians saw as presenting present serious problems are summarised as follows:

PRESENT MOST SERIOUS PROBLEMS OF THE FACULTY LIBRARIES - IN A NUTSHELL

1. CIRCULATION
   a) The problem of students and staff leaving the System with no check on material they may hold from libraries other than their own, some central check of this is needed.

b) There is a similar problem regarding loan of material to non-Technion users, e.g. industry workers: we suggested that some form of central deposit system might be best.

2. RECOMMENDED BOOKS
Despite all efforts, many staff members do not provide the libraries with lists of recommended books, or provide them too late; the reult is that these books are not put on the reserve list, and by the time the librarian sees from the demand that the book has been recommended - no more copies are available. The same is true of textbooks for specific courses when exams are held during the semester; the library is never informed of a spot exam and is unprepared for the sudden demand for a work over a short period of time. Much more cooperation is required between staff and library in this respect.

3. THE EFFECT OF THE CREDIT SYSTEM
In other countries where this system operates, the students are expected to buy most of the required material. In the Technion, for various reasons, students almost never buy books; the libraries must therefore organise to provide for the much greater demand for a wide range of material, and have so far been unable to do so as effectively as we would wish. For example, in times of budgetary difficulties, it is difficult to persuade the faculty members of the need to spend large amounts of an insufficient budget for basic undergraduate material, or extra copies of more advanced works that are now in greater demand.

4. THE NEED FOR EFFECTIVE COOPERATION BETWEEN ALL THE LIBRARIES IN THE SYSTEM
Cooperation would be much easier if there was a set policy code to which all libraries should adhere, and more channels of communication. Some librarians feel that the previous policy of monthly meetings of all faculty librarians is sufficient, or at least a good start; others feel that a narrower committee, e.g. the heads of the faculty libraries (especially within the framework of a few large faculty libraries), meeting regularly among themselves, and each providing the communication with the librarians they represent, would be more efficient.

5. BALANCING THE CENTRAL AND FACULTY LIBRARIES
A main goal of systems planning should be to find the optimum relationship and division of responsibilities between the Central and departmental libraries: one that does not provide too much control of the departmental

libraries by the Central Library and too little by the faculties, or vice versa.

I have visited a few of the libraries, and would emphasise the usefulness of this programme of visits in gaining an appreciation of the individual problems and potentials of each of the faculty/department libraries, and in contributing to the coordinative effort needed.

I recommend that it should therefore be continued during the next stage of the project, and should become a regular part of the activities of the research and development unit so necessary to the effective planning and development of library and information services in accordance with the needs of the Technion community.

As the duration of the initial stage of the Study was restricted to three months, and the development of a plan for a pilot implementation of computer-based procedures was required after only two months investigation, I supplemented the information gained by circulating a questionnaire to all faculty/departmental librarians. The questionnaire responses are presented in Appendix II.

It was also suggested that a programme of visits to the faculties involving the Dean of the faculty, the Chairman of the Faculty Library Committee, the Faculty Librarian, Professor Simon and myself, should be embarked on.

I reiterated this suggestion at the Library Committee Meeting on the 2nd May where a short introduction to the System Study was presented, and solicited the support of members of the Committee for the study itself, and for the programme of faculty meetings in particular. An encouraging response was received from the representatives of Aeronautics, Industrial Management, the new representative for the Medical School and Ing.Kohn. Professor Shamir emphasised the operational aspects of the Study, and the need for implementing a pilot project immediately following this stage of the work. The role of the Library Committee was questioned at this meeting, one of the functions being suggested as the contribution to discussions on the statutes and by-laws of the Technion Libraries System,and the presentation of the views of the members of the Committee on the existing status of the libraries and desirable directions and methods for change. It was suggested that the members of the Committee might write down some statements of the role and function of the libraries and work with the Systems Analyst to define the job of the Committee. The

involvement of several students' representatives in any discussions was also recommended.

A meeting was also held for the Heads of departments within the Elyachar Library, and I have since talked with each of them individually, and visited their departments. They have also made some progress in forming a Technical Services group to tackle common problems, and a meeting with them and the faculty/department librarians was scheduled for the 27th June.

INTRODUCTION

As the President said in his report for 1974/75:

> "It becomes ever clearer that the Technion has a role to play which goes beyond the training of engineers and technologists, scientists and physicians. It is not enough that we train the manpower which implements development policy. We must also be deeply concerned with the formulation of such policy as well. It is not by accident that more and more of the men who emerge from here as engineers find themselves moving into positions of leadership and administration. It is no accident because they have been taught to think, to analyse, and to make decisions based on needs, logic and facts."

He emphasised also the dual role of the Technion, the need to be a creative and original research institution and at the same time to be a teaching institution.

To serve the needs of the Technion for a library and information service adequate to the quality and range of its activities, and as part of the searching self-analysis and long-range planning the Technion is now undergoing, the Technion Libraries must also reassess their present role and plan ahead to meet the developing needs.

The vital importance of information as a national resource has long been recognised in many countries, and problems of acquisition and dissemination on national and international levels accorded attention and action. For instance, an amendment to part of the American new Higher Education Act, Title II Part C, concerned with Strengthening Research Library Resources and the eligibility for governmental support and assistance reads:

"FINDINGS
Sec.231. The Congress hereby finds and declares that --
a) education, scholarship and research are of great significance for the scientific, economic, and cultural development of the Nation, and that steady advances in the social and natural sciences are essential to solve the problems of a complex society;
b) the Nation's major research libraries are an essential element in a very substantial amount of undergraduate education, and are even more essential to the advanced

and professional education and research upon which the Nation depends; and

c) the expansion in the scope of educational and research programs and the rapid increase in the worldwide production of recorded knowledge have placed unprecedented demands upon major research libraries, requiring programs and services that transcend the capabilities of cooperative action and are beyond the financial competence of individual or collective library budgets."

In a developing country it is even more essential to make the most effective use of limited financial and professional resources for governmental, industrial and educational needs.

Duplication of effort and research, when the results may already be documented and available, lack of information necessary to achieve effective research or producation, and lack of awareness of progress made by others in solving such problems is exorbitantly costly and time-consuming.

Demands for more rapid and reliable access to the growing body of recorded knowledge strains the capacity of any library. Rising library costs, the continuing expansion and duplication of collections, and the growing sophistication and specialisation of information needs combine also to create a greater need for inter-institutional cooperation and planning among libraries

Library and information services have been traditionally a focus for the preservation and dissemination of the formal media for communicating information, the available published materials. Emphasis has shifted from preservation and accessibility to more active dissemination services to groups of users and to individual users. Although, in spite of interest shown by such diverse disciplines as cybernetics, semantics, anthropology, psychology and information science, it is still true that pathetically little is known about the way in which people use information. Definitions of needs, and therefore services, and measures of their effectiveness are similarly embryonic.

The increasing complexity of the acquisition and organisation of information sources and the inexorably increasing labour costs necessitate active exploitation of such expensively acquired and processed materials, and the use of new technology in storing, retrieving and transmitting knowledge.

Informal modes of communication or information exchange range from research colloquia and seminars to direct personal contacts, and libraries are of necessity involved in this process in providing information for such meetings, housing the reports of their proceedings, and to the extent that they are meeting places for users. They also have a role as a focal point for the interchange of information within an organisation. Information on local, national and international meetings, visits and group activities can be given, and - however difficult it is to measure actual library use, recent studies have shown how it contributes materials and opportunities for the 'technological gatekeeper' to transmit in turn to his colleagues.

While no one user group should be discriminated against or deprived of an optimal level of service, it must be realised that the range of services and the variety of materials that must be accommodated make severe demands for comparable levels of financial support. It is within this context that inter-library cooperation, and individual library analyses should be encouraged and supported.

Any reduction in the duplication of materials or processing activities will not only save money, but will also allow professional time and effort to be directed at the active dissemination of information, thus ensuring effective exploitation of costly materials and effective employment of professional expertise - so demonstrating the real potential of a dynamic library and information service.

To quote Professor Peranio, "all human activities have one thing in common. The problems with which they deal demand a synthesis of knowledge in both the 'live' and 'non-live' world about us" - and for this synthesis a wide-ranging but effectively selective access to information is essential.

(Human Engineering at the Technion. Publication No.42. June 1965)

QUESTIONS OF FUNCTIONS AND ROLE

The objects of the Institute are defined in its Constitution as:

(i) The dissemination of knowledge through education and the advancement of knowledge through pure and applied research in pure and applied Science, Engineering, Architecture, Technology and related activities including the Humanities, Social Science and Education.

(ii) The education, in the widest sense, of the students of the Institute.

(iii) Service to the State of Israel and the economy of Israel by counsel and research, and by other appropriate means, and to serve the people of Israel by the provision of courses of instruction and lectures, the publication of books and similar activities in the areas specified above.

The challenge of management in the Technion Libraries is the effective acquisition, allocation and use of resources in relation to the needs and objectives of the Technion community.

In supporting the transfer of knowledge from University to Industry, Mordecai Levy also states that "these resources are at the disposal of the industrial community, as are the services of a staff of experienced information officers who undertake literature searches in every kind of publication, such as books, periodicals, manuals, reports, theses, standards, patents and specifications in order to retrieve the pertinent information required. (For) a modest fee..."

> (Levy, Mordecai M. Creating the University-Industry Interface: the Israeli experience. Israel Journal of Development. Vol.1. No.3. 1974.)

If also, as this article says, "The express policy of the Technion (is) to formulate its curricula, NOT according to TODAY'S practices and requirements of industry, but rather on the basis of a judicious anticipation of TOMORROW'S need", the Technion Libraries can do no less than to support these aims.

The members of the Academic Development Committee, in their Development plan for the years 1976-1980, recognise the contribution of the Technion to the State as:

"(A) High-quality technological manpower and the ability to help the State become economically independent and to attain outstanding economic and technological aims. This is the State's most precious product.

(B) Fundamental and applied research which contributes directly to the advancement of Israeli technology and science."

and emphasise that the central challenge in the present economic situation is to bring a constant rise in quality.

They also recommend that in line with predicted national needs, there should be an increase in the number of students admitted, from 1500 during 1975 and 1976 to 1850 in 1979 and 1980, including a greater emphasis on those interested in science subjects and teacher training. They would plan also for an increase of at least 75 academic positions, a reappraisal of the Graduate School besides encouraging the employment of Research Fellows and discussions regarding plans for the development of new fields of instruction and research.

They state further in their aims and criteria for development that:

"As the senior and largest technological institute in the Country, the Technion is responsible to a large extent for the education of engineers and scientists on a high level for the Israel economy. It should be the pioneer in developing and aiding applied science and technology. As a prerequisite for achieving these aims, the committee considers it essential that there be a continuous watch over the level of teaching and research at the Technion, with a view to improving it and to increasing Technion's involvement in the solution of problems of the State and society."

Efforts will be focussed on the improvement of instruction besides updating the curriculum and developing new fields of instruction as the requirements of the State and the Technion indicate. Initiatives for developing new fields of research should be welcomed and the scope of sponsored research encouraged, while academic and public education and industrial development programmes should also be sought.

The traditional mission of University Libraries has been to supply Library resources to meet the scholarly needs of faculty and students.

The Technion, in common with all universities, is vitally involved in designing, developing and administering educational programmes to meet changing requirements and expectations. Student, faculty, community, national and international needs in education and information grow in volume and complexity, as reflected in the continuing emphasis on interdisciplinary studies and varieties of information media.

The Technion programme encompasses not only the educational and research needs of students and faculty members, but also its responsibility to industry generally, together with its focus in the National community of information oriented organisations.

This means considerable and differing, and sometimes conflicting, demands on the Libraries for Information resources and support.

While no one user group should be discriminated against or deprived of an optimal level of service, it must be realised that the range of services and the variety of materials that must be accommodated make severe demands for comparable levels of financial support, besides depending to a large extent on human resources and the way in which they are organised to work together. Obtaining and processing the increasingly costly materials is a necessary investment that should then receive as much energy and effort aimed at ensuring their active use as that needed in their preservation for future generations.

Organising for the multifaceted roles a Library and Information Service must fulfill in a major knowledge based organisation entails continuous and explicit planning and development in concert with THE EXPRESSED NEEDS OF ALL THOSE

INVOLVED IN PLANNING THE OVERALL ORGANISATIONAL GOALS.

Van Dijk, the Library Director of the Royal Dutch Academy of Sciences in Amsterdam, says:

> "Since Governments recognise the important role of scientific and technical information for industrial and social development, they have to see to it that in both academic education and industrial training, information use and information transfer receive due attention."

(van Dijk, C. Education and training for information users and intermediaries. Open. Vol.2. No.10. Oct. 1970. pp.651-654.)

It is even more necessary then, that a Library and Information Service should continue to receive support and attention within its own parent organisation.

"The Librarian depends upon the university executive for information on administrative and faculty decisions which effect shifts in the configuration of the academic programme, in order that he can plan and budget adequately to provide the library resources to support the sophisticated and specialised demands of the faculty and students.

The university executive depends upon the Librarian for a unique and valuable perspective on the academic programme, derived from his university-wide responsibility to support the major informational needs of the entire faculty and student body."

From: Booz, Allen & Hamilton Inc. Problems in University Library Management. Association of Research Libraries. 1970.

The need for a continuing dialogue reflecting the library's role as a "mirror-image" dependent on, and not independent of, the academic programme, and its involvement as an integral part of the whole system cannot be overestimated.

The Statutes of the Technion Library System detail the functions, structure and budget allocation for the Libraries. The Statutes, and the Director's recently suggested revisions reveal:

- the range of audiences to be served,
- the variety of media to be acquired,
- the importance of the structure and administrative composition,

and the necessity for operating the physically separated Libraries as an integrated system, in striving to meet the Technion's limited information resource needs by the most effective and economic means possible, and the responsibility for serving as The National Center for acquiring and registering the core collection of the technical and scientific literature published in Israel and the world.

In a study of the menagment of Libraries (An analysis of managerial activities in Libraries. P.A. Thomas and V.A. Ward. Aslib Occasional Publication No.14 1974) in the U.K., the verb "to manage" was defined as "to plan, organise or operate, and control an organisation's, or a part of an organisation's, activities".

The three functions of planning (defining and specifying objectives); organising (obtaining and allocating resources) and controlling (monitoring performance and correcting if necessary) were seen as both overall systems activities, and as integral parts of eight specific areas of managerial activity:

Accommodation
Finance
Equipment
Materials
Staffing
Services
Public Relations
Professional Activities

It was also necessary to emphasise the environment within which the Librarian as Manager pursues his activities; which is composed of the parent organisation and the Library's users and relationships with other libraries and information organisations.

Therefore, to make the most effective use of Library resources in relation to the expressed needs and objectives

of the Technion community, the Director of the Libraries System must be active in all these areas.

There have been a number of reports, and position papers are still being produced, on various aspects of such activities. The present Systems Study is concerned specifically with presenting:

a clarification of the objectives of the Technion Libraries System within the Technion, and in relation to the Israeli National Library and information scene;

a definition of appropriate structures, organisation and methods to achieve these objectives.

RECOMMENDATIONS

During the course of the study the following tasks emerged as deserving immediate attention, and recommendations for action are outlined where appropriate:

1. Develop the implicit and explicit relationships already established between the existing Libraries as an integrated Technion Libraries System

2. Strengthen existing links with other elements of the Technion and develop new ones; e.g. with Deans of the Faculties and their Library Committee representatives; with the Center for the Improvement of Instruction; with the Public Relations Office, with the Planning and Development Office, with the Research and Development Foundation

3. Strengthen the internal operations of the Libraries, applying new developments in technology for storing, retrieving and transmitting information as appropriate and taking into account the constraints and limitations of existing and anticipated budgets, staffing and programme commitments

4. Encourage more effective use of collective resources available locally and nationally by cooperation, organisation and the provision of active information services and assistance to users

5. Coordinate the acquisition of core library materials in the subject areas appropriate to the Technion's teaching and research programmes

6. Man the facilities and services with competent, trained staff.

DEVELOPING AN INTEGRATED TECHNION LIBRARIES SYSTEM

The problem of organising and operating the separated Libraries within the Technion as an integral service, and of giving them an identity as a system within the Technion, and a focus from which to identify with the role of the Technion

itself, is vitally important

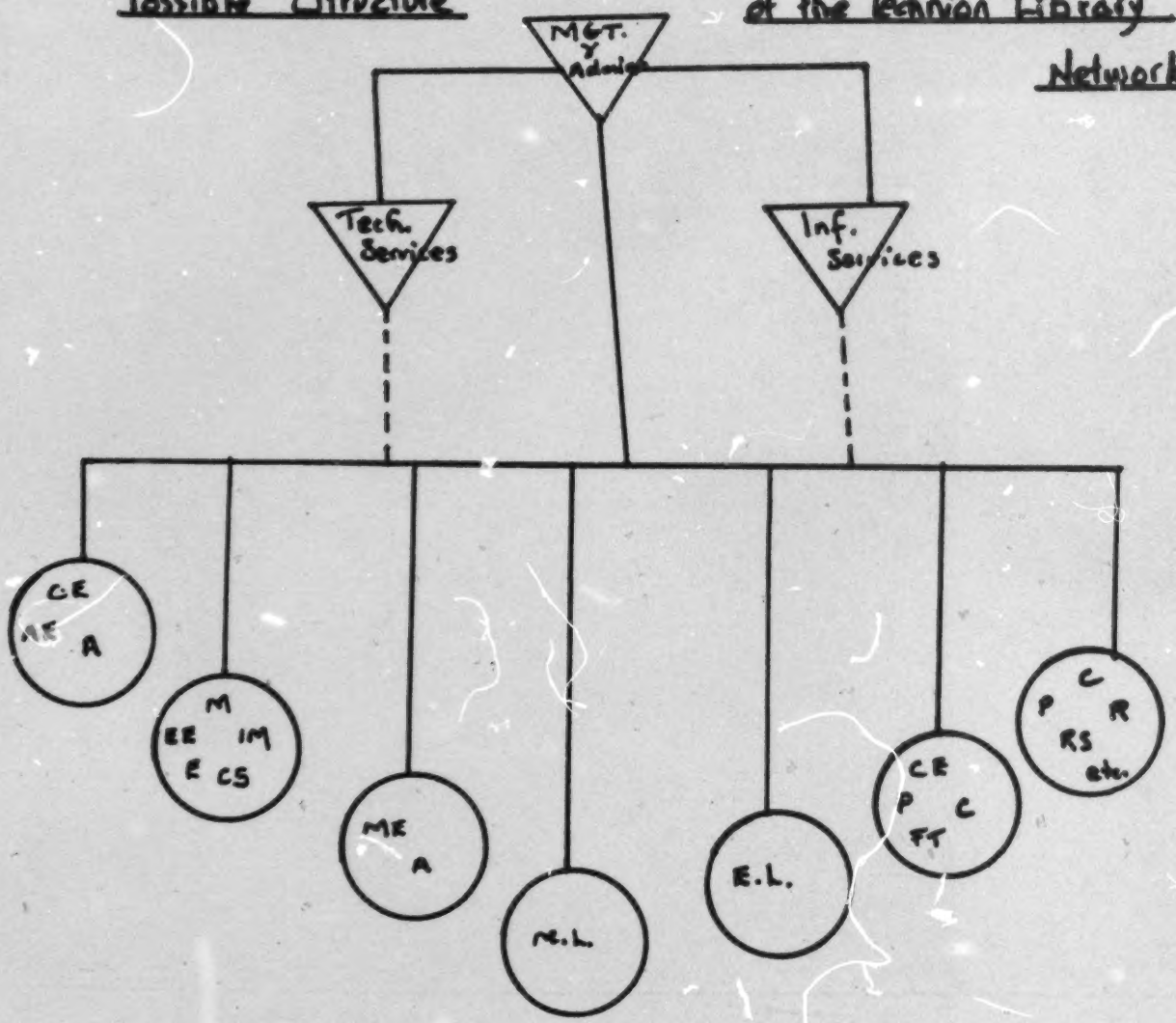
The statutes of the Technion Library System clearly envisaged a structure composed of a Central Library and 'special professional libraries that are branches of the Library'. Operationally there is some balance between the relationships of the Faculty Libraries and their Faculties and the Faculty Libraries and the Elyachar Library, conceptually there is ambiguity in the relative expectations and responsibilities involved. In clarification of the functions of the Technion Libraries, the system could be regarded as a Network, and the functions of the individual nodes or units explored in this light.

A network of libraries is composed of individual library and information units who, recognising that no one individual unit can be self-sufficient enough economically or organisationally to satisfy its users' needs, work together as a mutually dependent, interactive, cooperative system. There are many possible levels of cooperation, from inter-library loan through coordinated acquisitions policies to centralised ordering and processing; many stages between absolute centralisation and autonomous, decentralised isolation.

A structure that reflects many of the positive aspects of present implicit, and sometimes informal, interactions but also allows for flexibility and development according to the needs revealed by a more detailed exploration, is diagrammed as follows overleaf, as an indication of the potential for reorganisation, not as the necessarily preferred alternative. The complexity, and the importance of the subject would justify more detailed investigation than has been possible at this stage of the study.

Some progress has been made, however, with developing closer working relationships between groups of libraries. The groupings reflect previous informal relationships, and have proved helpful in contributing to the present study and in representing the views and suggestions of faculty and department librarians. This grouping is illustrated in the suggested organisational structure explored here.

Possible Structure of the Technion Library Network



Legend

Core Administrative Functions and Service Functions

Clusters of Faculty / Departmental Libraries

Briefly, the core administrative and service functions support the operations of the individual units, shown here as clusters of related units. There are of course several different clustering arrangements possible, as demonstrated in the Director's "Development Plans for the Technion Libraries System", where he explores the whole problem of centralised versus decentralised facilities and develops criteria for such a decision and suggests a plan of action. The grouping is that derived by the Faculty Librarians at a meeting held to introduce the present systems study and to discuss plans for the Library's future.
The Medical Library and the Elyachar Library are shown separately because of their unique functions and relationships with national and international information systems.
The separation of the Elyachar Library from the triad of core functions serving the needs of the whole network in the diagram, demonstrates the supportive nature of the relationship and its congruence with that between the triad and other units rather than the accident of physical location.

The Management and administrative services are directly responsible for the Technical Services and Information Services, besides holding final responsibility for the Network as a whole, and the individual library units. Operationally, management - and especially planning and development - would be facilitated by regular meetings with representatives of each of the clusters of units shown, and would strengthen the coherence of the network as a system. The representatives would be responsible for communcations between their constitutents and the Representative Management team, while not obviating direct communcation at any level as required.

Technical services would provide centralised acquisitions and processing as at present. Information services would comprise photocopying, library education, bibliographic and information support services and non-print media information services.
The Faculty Librarians would be responsible for ensuring the needs of their faculties were expressed, and for communicating overall library policies and information on services to their users.

THE COMPOSITION OF THE CORE FUNCTIONS

Management and Administration: The Director of the Technion Library Network (Technion Libraries, Technion Library System - or final agreed title)

Manpower
Secretariat
Bookkeeping/ Budgeting
Systems analysis and design

Technical Services: Acquisition
Cataloguing
Classification
Periodicals

Information Services: Photocopying
Instruction in the use of library materials
Information to Industry
Bibliographic information services to staff and users
Library Publications
Non-print Media Information Service
Hebrew Literature

Which means, of course, that Reading Rooms, Entrance Control, Stacks, Circulation, and possibly Building Maintenance would all be the responsibility of the Librarian of the Elyachar Library, similarly to the responsibilities of the Faculty Librarians.

THE TECHNION LIBRARIES SYSTEM AND THE TECHNION

Links with Users; with the Centre for Instructional Improvement and with the Technion Research and Development Foundation.

LINKS WITH USERS

A benefit survey of M.I.T. libraries in 1968/1969 substantiated the hypothesis that different members of the M.I.T. community are satisfied by different allocations of the M.I.T. library budget. This hypothesis is also very relevant to the present situation at the Technion. In discussions with faculty members, library staff and students, it became very obvious that there are many different views about the functions and the performance of the various parts of the Technion Libraries System.

The need to develop a corporate identity, and to make explicit the roles and functions which may be fulfilled, and therefore the budgetary implications, is of paramount importance.

The following specific recommendations are therefore presented:

1. An in-depth user survey should be carried out, concentrating on attitudes towards the present functions or roles of the libraries. It should include the questions illustrated overleaf in the draft questionnaire.
2. A programme of library education should be developed, in cooperation with faculty staff and emphasising areas relevant to the various curricula needs.

DRAFT QUESTIONNAIRE FOR USER SURVEY

POSSIBLE FUNCTIONS OR ROLES OF THE LIBRARIES:

to provide the means to discover and/or browse through new books
to provide the means to browse and read current journals
to provide an informal place to lounge, relax and socialise
to provide required and recommended reading
to provide a 'place' to study required and recommended reading
to provide a place to study your own material
to provide books and material for research and term papers
to provide bibliographic services
to provide reference aids through professional librarians

TECHNION STATUS:

Undergraduate - year 1
Undergraduate - year 2
Undergraduate - year 3

Graduate Student - Masters

Ph.D.

Faculty

Course or Department

Residence - on campus
off campus

How many hours in a typical week in any of the Technion Libraries?

0-5
6-10
11-15
16-20
21-25
26-30
more than 30

I met with the Students Association representative, Elisha Rabinowitz, Member of the Committee for Academic Affairs, and discussed generally the students' concern in Library and Information Service provision at the Technion and the present Systems Study.

I have also seen his report to Prof. Bear, the Director of the Library, Members of the Library Committee, the Chairman of the Committee for Academic Affairs and the Students Association, regarding the 'Policy of the Students Association on the subject of the Library'.

We have kept in touch, and exchanged information, specifically on the progress of the present study and of the comparative survey on the subject of policy of dissemination or centralisation of libraries instigated by the Students Association. Prof. Simon and I have also met with the new Chairman of the Students' Association to discuss the matter further, and exchange views on current problems.

It would seem that there is a definite and perceived need to rationalise access to library and information resources at the Technion with all urgency. This reinforces the concern of the Administration, members of the Faculty and library staff with the development of an integrated network of services.

In particular:

Immediate action on liberalising and rationalising loan policies at all Faculty and Departmental Libraries. .

This action would not only be seen as a welcome step in providing needed services, but as a demonstration of good faith in moving towards the implementation of a programme of improvements. It would also be a strong factor in initiating the closer relationships between units of the Technion Libraries System so necessary in developing an integrated service, and would help to develop the sense of a common identity and commitment to the provision of services within the Technion's overall needs and functions.

Students are particularly aware of the benefits that can be derived from:

a quiet place to sit and study;

the importance of open-shelf access to materials to encourage browsing and the widening of the awareness of the range of materials that can support the learning process;

the potential availability of a wider range of services through effective use of mechanisation in the necessary processing activities involved in library and information work.

They are also sympathetic to the problems the Technion Libraries System faces in balancing the needs of its users and the constraints affecting the services that can be offered from the complex, dispersed and limited facilities presently available. They see a need for overall coordination of the present uneven and fragmented service, while appreciating the present high levels of service provided by the individual librarians operating under the existing unsatisfactory situation.

They see the functions of the Elyachar Library as:

the provision of reading rooms, especially for use during the first two or three years of study, and the provision of general as opposed to specialised literature. Most importantly, they see it as the Center of the information system for all students, including graduates and research assistants. They see it also as having a circulation function, but not as the major source for this service, as the credit system and increasing project work has encouraged and emphasised the trend for all students to need the services of Faculty and Departmental Libraries for specialised subject needs - although still needing to rely on the Elyachar Library for general text books.

They recognise the space restrictions prevalent in all parts of the system, and its concomitant problems of noise and heat, and conditions not generally conducive to concentrated study, but would suggest the use of financial support to improve present arrangements rather than to plan big new extensions for hypothetical improvement of the situation for an unspecified future.

They also see a need for an active policy to provide a programme of library orientation and information use for students as an integral part of the compulsory subjects, and to emphasise the active dissemination of information as a library function rather than passively providing a service to those who request it, another area where they can see potential progress if mechanisation is introduced. They also suggest that such investment in mechanisation would provide good control information allowing better coordination of the scattered library units, and the exchange of information between both systems' elements and system users, besides compensating to some extent for the closed shelf aspect of present provision.

They comment on the disparate ratio of finances for the Technion Libraries and for Haifa University, where the latter have 3000 less students, but is supported by .3 million more Israeli pounds than the former.

THE CENTER FOR INSTRUCTIONAL IMPROVEMENT

The Technion Libraries and the Center for Instructional Improvement are already cooperating to the extent that the Carasso Self-Study Center houses a Non-Print Media Library. The Librarian has developed a union catalogue of the non-print media holdings of the various faculties and departments, and will coordinate non-print media services for the whole of the Technion, and can direct users to relevant libraries and departments. The potentials of such a service are indicated overleaf in the notes on some of the questions that must be answered in the planning and operation of such a service.

In addition, the two units are cooperating in the production of a tape-slide guide to the use of the Library. These early activities could be developed into even stronger cooperation, the aims of the Center for Instructional Improvement and the activities of the Technion Libraries System have a strong common interest, as the Directors of the units have seen. Any improvement in instructional methods is likely to be closely linked with the provision of relevant informational media; and improvement in the use of information media (through an intensive educational programme in that library and information services) will have a pervasive effect throughout the subject disciplines.

If librarians are to have appropriate resources available and managed in such a fashion as to enhance the student's learning and facilitate self-study, they must work closely with the faculty in deciding what materials are to be assembled and how they are to be organised. They must be drawn into active collaboration with the teaching faculty. They must be privy to the teaching aims, and know the answer to the question: information for what?

This implies that the library must have adequate space, adequate resources and enough qualified librarians to participate in this role, and that these librarians are given more than formal opportunity to collaborate with the faculty.

If a central function of the Technion Libraries System is to contribute to the instructional programme of the Technion, then some hypotheses developed by a research team from Wayne State University, funded by the Office of Education in a project concerned with exploring methods of developing a more vital relationship between the library and teaching at Monteith College are highly relevant.

The hypotheses are as follows:

"that a student is likely to acquire library understanding and competence when his experiences in the library are functionally related to the objectives and content of his subject courses and when this relationship is made manifest;

that the student's library experiences can be so related to his course work when librarians are involved from the beginning in the course planning;

that library staff involvement can stimulate extensive exploitation of available library resources in course work;

that when librarians are closely involved in course development, their contributions, especially in connection with the use of materials aspects of course content and objectives will be valued by the faculty and will be implemented in the curriculum;

that providing lecturers with bibliographical assistance will result in making more effectrive use of library resources".

ref: Knapp, Patricia B. The Monteith College Library Experiment. Scarecrow Press. 1966.

If librarians at the Technion are to have appropriate resources available and managed in such a fashion as to enhance the students' learning and facilitate self-study, they must work closely with the Faculty in deciding what materials are to be assembled and how they are to be organised. They must be drawn into active collaboration with the teaching faculty. They need to be privy to the teaching aims, and to know the answer to the question - information for what?

This implies that the library must have adequate space, adequate resources and enough qualified librarians to participate in this role, and that these librarians are given more than formal opportunity to collaborate with the faculty.

In particular, students need:

to have a clear conception of the function of information in their work, and expect to find 'evidence to be examined', rather than the 'one right answer' to the question;

to gain sophistication in evaluating books, taking into account such clues as to their probable worth as date of publication, quality of references cited, etc.;

to have a clear understanding of the classification system, and the catalogue as keys to the contents of the library;

appreciate the differences in organisation in the literature, and terms like theory, approach, concept, method, school, style, etc., characteristic of the organisation of the disciplines, and of subject, form, period and place;

to be acquainted with the bibliographic tools which provide access to the literature, i.e. guides, surveys of research, reviews, annuals, abstracts, indexes, etc....

THE NON-PRINT MEDIA LIBRARY - Some Questions

POSSIBLE PURPOSES: Provide non-print media for students and staff.
Provide information about non-print media for students and staff.
Provide instruction in using non-print media for students and staff.
Provide demonstrations of non-print media for students and staff.
Provide a place in which students and staff can use non-print media.
Acquire, process and maintain non-print media.
Monitor use of non-print media.
Play an active role in increasing learning and instruction efficiency and effectiveness.
Develop, improved learning and teaching techniques and systems.
Demonstrate relationships between non-print and print media in the teaching/learning process.
Encourage use of non-print AND printed media.

i.e. These should be arranged in order of specificity OR priority - therefore activities, and services to be derived from them.

FACILITIES & EQUIPMENT - e.g. Carasso Self-Self Study Center
the provision in the Elyachar Library, and in faculties.

SERVICES TO BE OFFERED -

e.g. loans within Study Center

loans to Faculty

instruction in use of machines

contribution to national bibliography

catalogues in faculties

information to Faculty Librarians, etc.etc.

MATERIALS e.g. Films

Cassettes

Slides

* IF books - which books? i.e. related to other materials held, not "just books" - show how use of 1 media can enhance/lead into others.

STAFF e.g. requirements for different levels of service

i.e. opening hours when other duties such as faculty staff demonstration lectures, liaison, must also be dealt with.

THE TECHNICAL INFORMATION SERVICE established in 1971 and continuing, albeit with reduced staffing since the secondment of the Head of the Service to the Public Relations Office of the Technion, was a successful inovation. Its contribution to the aims of the Technion in serving the State and the people of Israel, and its importance in making its unique resources available nationally have been recognised not only by recipients of the Service, but also by the Technion Research and Development Foundation, as indicated in the following Memo from the Director:

"Subject The place of a university library in Industrial-University Interface

Somebody or other said "a university is a collection of books". In any case a university library will be much broader, larger, and better serviced than that of almost any industry. This statement may not be true of a developed country such as the United States or England, but it is certainly true of Israel.

A university should therefore open up its libraries to industrial technological manpower. It will not only help the industry, but could be the first contact which an industry makes with the university. This could then lead to other services such as research, testing, and consultation. The use of the library by a technologist from industry would also enable him to know what seminars and other important lectures are being given at the university. Thus again the library could serve as an important public relations tool.

In addition, just as industries are dependent on special equipment of universities for special services, they could also receive special services from the library. Technion began such an enterprise several years ago. It prepared literature surveys to order for companies. This I feel could be especially important in Israel. Technical staffs are small, and they do not have the time to make the necessary literature surveys so important to any scientific activity.

Another service which a library might perform would be to publish abstracts pertinent to the particular company or industry. This is the type of service which we have rendered and are still rendering to Koor Industries."

The Information Service should not be a burden on the

Library, but should be self-supporting, gaining financial aid from both individual users and through the Technion Research and Development Foundation and its service to industry programme.

Information is a vitally important national resource. In a developing country it is even more essential to make the most effective use of limited financial and professional resources and duplication of effort and research is even more unacceptably costly and time-consuming.

Demands for more rapid and reliable access to the growing body of recorded knowledge strains the capacity of any library, and makes more vocal the urgent need for cooperative endeavours.

The Technion Libraries System, as a vital national information resource, and as a part of the Technion, has a responsibility to make its materials and services available, and to participate in the development of such activities, and indeed to give impetus to the development of effective inter-institutional cooperation between libraries in Israel.

I would therefore recommend increased suppport for the Technical Information Service, drawing also on the subject expertise of faculty/department librarians where possible, as outlined earlier in this report, and drawing support from the Industrial Liaison Service of the Technion Research and Development Foundation. The provision of the Service requires adequate staffing to cope with demands of an ongoing activity, while planning its development and coordinating the contributions of specialists. Additionally, the resurrection of the guide to current information about the Hebrew literature, which was of national benefit, but which has had to be suspended because of staff cuts, is highly recommended. As indicated, this service was useful both within and beyond the immediate community of Technion users, and has been sadly missed.

THE DEVELOPMENT OF AN INTEGRATED COMPUTER-ASSISTED LIBRARY SYSTEM:
EXPERIMENTAL PILOT PROJECT;
COMPUTERISED ACQUISITIONS PROCEDURES

The internal operations of the libraries should be strengthened by applying new developments in technology for storing and transmitting information.

It is therefore proposed that an experimental pilot project, partially funded by the grant made available through I.B.M., should address the development of an integrated computer-assisted library system by designing and implementing computerised acquisitions procedures for English language monographs.

Although present staff savings in the form of cuts in manpower would not be attained, it should be possible to make more time available for the professional activities outlined in this report, and so urgently needed to actively support the information needs of the Technion Community, and to accommodate the increasing work loads foreseen in the future without the matching increases in numbers of staff that would be required by present manual methods.

CRITERIA CONSIDERED IN RECOMMENDING PILOT PROJECT

Criteria considered for choosing a specific pilot project to be implemented as soon as possible after the systems study phase included the following:

Applicability: contribution to existing functions

possibilities of providing new services

providing management information

comprehensiveness

integration within system

improvement of performance

reduction in cost/effectiveness ratio

Flexibility: time range of applicability, i.e. once-off, or ongoing system

facility to accommodate technological change and development

facility to accommodate organisational change and development

degree of openness to a continuing change programme

degree of openness to future requirements

Controllability: degree of control available on -

- inputs
- processing
- outputs
- operators
- users
- equipment

Acceptability: to users

to operators

by the organisation

ease of explanation, education in systems operation

influence on human relationships within the organisation

Ease of Implementation: planning and design requirements timescale

simplicity and convenience of method, including

data collection and conversion

degree of correspondence with current methods

requirement of special skills

use of current skills

staffing and administrative organisation

availability of resources, i.e. hardware, software, personnel

phase-over from existing to new system

Particular weight was given to:

- the potential for developing an integrated computer-assisted library system
- demonstrable saving of staff time, and therefore immediate impact on library staff and library users
- the systems analyst's knowledge and experience of the use of automation in libraries in the U.K. and the U.S.A.

Within the framework of these criteria, and having reconsidered recommendations for mechanisation made in previous reports, four areas for possible computerisation were considered, together with their implications for a pilot project:

- Serials control
- Technical Report literature control
- Monographic (i.e. book) control
- the U.D.C. index to the Subject Catalogue.

In any development of computer based procedures in the Technion Libraries, the core data base is the bibliographic description of library materials. The basic philosophy in making the most effective use of bibliographic information is that of making one record fulfill as many functions as possible without continuously regenerating the information for each new need.

It is therefore proposed that a system be developed - tailored to immediate Technion needs, but with the potential for making use of national and international developments as and when appropriate.

Whatever the present difficulties involved in using the Library of Congress or British National Bibliography MARC tapes, it is imperative that the Technion BOOK records be compatible with these international standards.

In this way, it can benefit from the vast experience in developing and using computer based library procedures in the States and in Europe, and be able to work towards the ideal system design, where the fullest use can be made of

existing machine readable bibliographic data, so cutting out wasteful and costly duplication of work and re-reproduction of records.

All library procedures, from selection and processing, through use and maintenance of the collection, are tied to the use of the bibliographic description of individual bibliographic items: monographs, serials, reports, journals, and audio-visual media. The procedures are accomplished by adding elements of administrative information: e.g. date of action, type of action, authorisation of action, record of action completed, etc.

Information in a manual system is also provided by the place of the record, or form, in the sequence of activities; which file it is in, or whose desk it is on, when.

Within this framework, and in the context of continuing support for the work of the analysis and research team, it should also be possible to address the other areas of computerisation mentioned in this report.

THE COMPUTER-BASED ACQUISITIONS SYSTEM

Inputs will originally consist of forms from the Faculty Librarians and forms from the Elyachar Library, as used at the present. Copies of these forms will be given to the Systems Analysis and Research team; during the pilot project stage old forms may be used for program development and testing. Orders will continue to be dealt with in the usual manner, although Library staff will familiarise themselves with elements of the new system.

Once the programs for the pilot project have been developed and tested, Elyachar Library input should be direct, and Faculty Libraries from forms (eventually there should be direct input of Faculty order information).

Orders for booksellers will be printed.
Lists for the Elyachar Library Accounting Department will be printed, in Faculty/Fund order, and copies for each Faculty Librarian.
Chasers for overdue orders will be printed for despatch to the Booksellers.
Receipt information will be entered direct on receipt of the invoice, and receipt of the books.
Catalogue pro-formas will be printed to speed the cataloguing procedure.
Monthly, and cumulated lists of new acquisitions will be printed, for Faculty Libraries, members of Academic Staff, and students as required. The cumulated lists would in essence be short form book catalogues for recent acquisitions.

COST-BENEFIT ASSESSMENT

Costs will centre mainly around personnel and the use of the computer and related equipment needed to carry out a pilot programme of this sort. A rough estimate can only be given at this stage, more accurate figures can only be presented after detailed design work.

The number of records will initially not exceed 900 per month. Each record will be approximately 500 bytes, 5000 records, maximum 2 million bytes which will need 10 cylinders. This storage space should be adequate for approximately 6 months records in the ongoing system, at a cost of IL782 per month.

For implementation, a terminal placed in the Elyachar Library should be rented, at a cost of IL1,200 per month. If it is possible to secure one in the Library during the pilot project, the ease of design and progress of the work would be considerably enhanced. In the meanwhile, access to a terminal/s on the Technion Site must be assured.

Tape storage is IL20 per month, and 2 tapes will be needed for systems backup initially, plus a rate of acquisition of 1 per month for transference of archival records.

Computer CPU time is IL92 per minute, and computer memory IL6.90 per 100 minutes x KB.

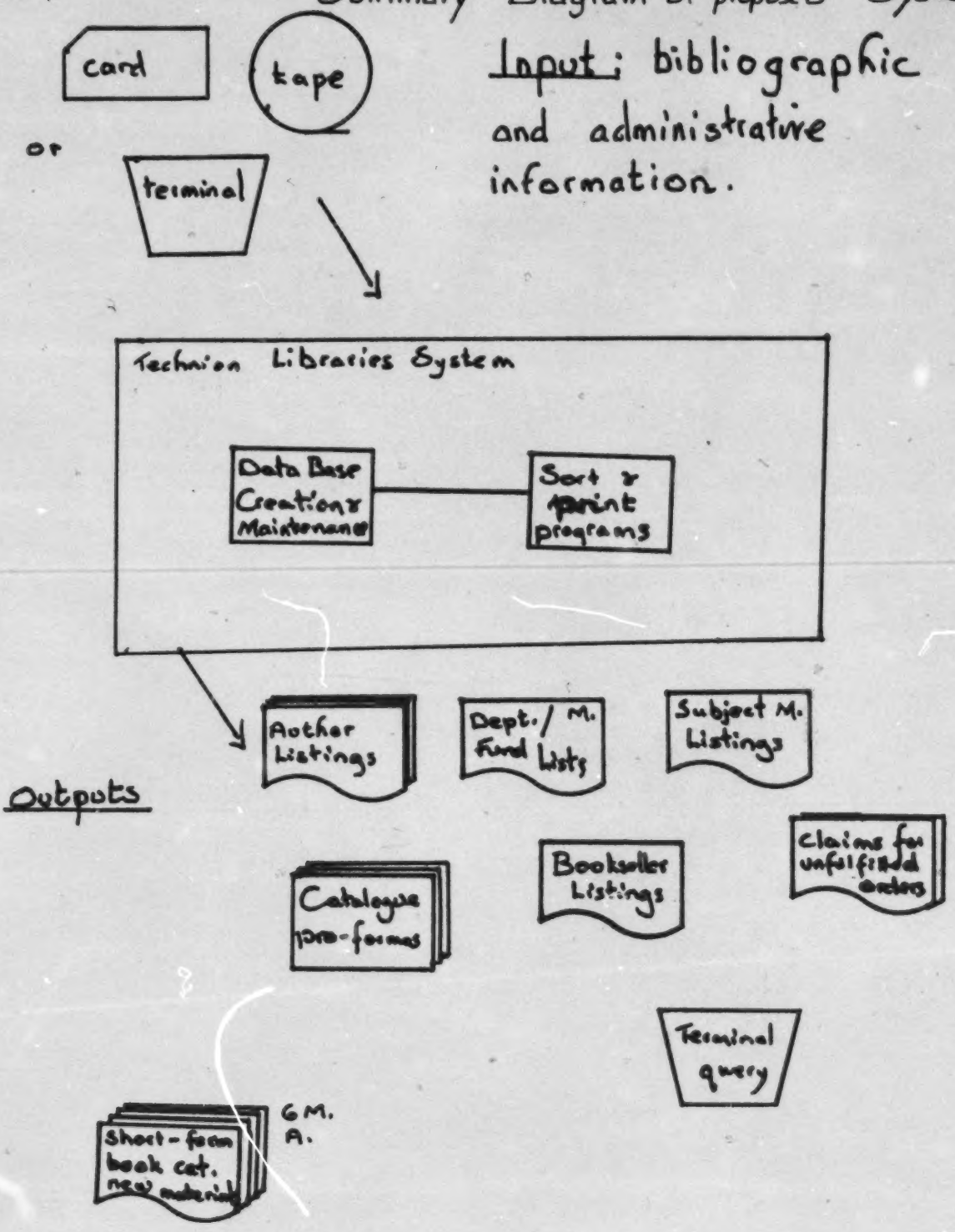
Use of the terminal is IL20.70 per hour, use of discs IL11.50 per 1000 accesses. Three months development work, with a maximum of two hours computer time is IL1,040, plus terminal use of 10 hours per week, for three months at IL20.70 per hour, is IL2,484.00.

Total investment in computer use during the pilot project:

terminal rent	1,200
terminal use	828
cylinder storage	782
tape storage	60
computer use	347
per month	IL 3,217

7

Summary Diagram of proposed System.



In addition, the work to be accomplished includes detailed systems design, the creation of the data base, and of the necessary report generators, and will require the services of:

Systems analyst and project leader . . . . . 3 man months
Systems analyst and programmer . . . . . 1 man month
Assistant systems analyst . . . . . 1.5 man months
Assistance from the Librarians involved . . 1 day per week
Secretarial assistance . . . . . 1 man month

and would begin in July, and proceed over four calendar months. The phase-in of the implementation stage would be over six calendar months from the start of the pilot project.

Most of this team effort would be available from within the existing system, and the initial I.B.M. grant contributes towards the salary of the Systems Analyst and Project Leader.

It is suggested that some assistance from the Systems Analyst during the implementation phase of the project should be considered, and that development of the integrated system envisaged, and from which the greatest return for investment would be achieved, will require the full-time services of a resident systems analyst and support staff on a continuing basis during the development of the appropriate new modules; i.e. full design and implementation of all Acquisitions, Processing, Use and Maintenance sub-systems, and their extension to other bibliographic materials such as reports, journals, audio-visual media, etc.; and their integration with the modules as implemented.

Benefits will include the prevention of unintentional and costly duplication of orders, streamlining procedures and reducing the clerical content of the work of the Librarians involved. Specifically, filing activities at the order and receipt stages of the acquisitions procedures will be obviated. In addition, the ease of obtaining reports, both on management information, and lists of new acquisitions, will be helpful - not only in providing current awareness for librarians and library users, but also in introducing the concept of computer based library services to both these groups.

The benefits to be derived from an integrated system, include union type catalogues of all Technion holdings, and

for all media, including that most elusive of control, the research report literature, have already been outlined in previous reports. In addition, the unifying effects of such a system on the physically scattered units of which the Technion Libraries System is composed, should not be underestimated, nor the consequent benefits to be derived by the libraries' users.

CONCLUSION : IMPLICATIONS FOR ACTION

Earlier in this report I defined the problem that we all share, as the need to make the most effective use of limited resources. In spite of cuts in funding and manpower, indeed perhaps because of these very cuts, organisations have been asking questions about why they exist and what they are doing. Perhaps even more important, they have considered what things they should really be giving priority to, deciding what the important areas of activity are, not just for now, but to ensure continued organisational survival in the future.

Librarians all over the world share many of the same problems: cuts in budgets; dilemmas about whether to computerise or not; how to cope with increasing demands from users without being able to employ more staff to give the really active information services that are needed.

There is so much scope for professional activities in reader services and the provision of specialised information packages (that is, in the active exploitation and use of the materials that are so costly to acquire and to process), that help with routine activities must be actively sought. Any reduction of the time that has to be spent in processing and control gives more time and energy to give to the user, so demonstrating the real potential of library and information work and the need for continuing substantial support for these activities.

There is scope and potential in the Technion Libraries System, there are also the urgent local and national needs for its services. There is no one quick, short, easy solution to the complex problems involved in developing the most effective balance of needs and resources for the various groups of users the Technion must serve. There are, however, immediate implications for action to gain present improvements in the situation and that would work towards the development of a vital and effective library and information service integral to the plans and organisation of the Technion.

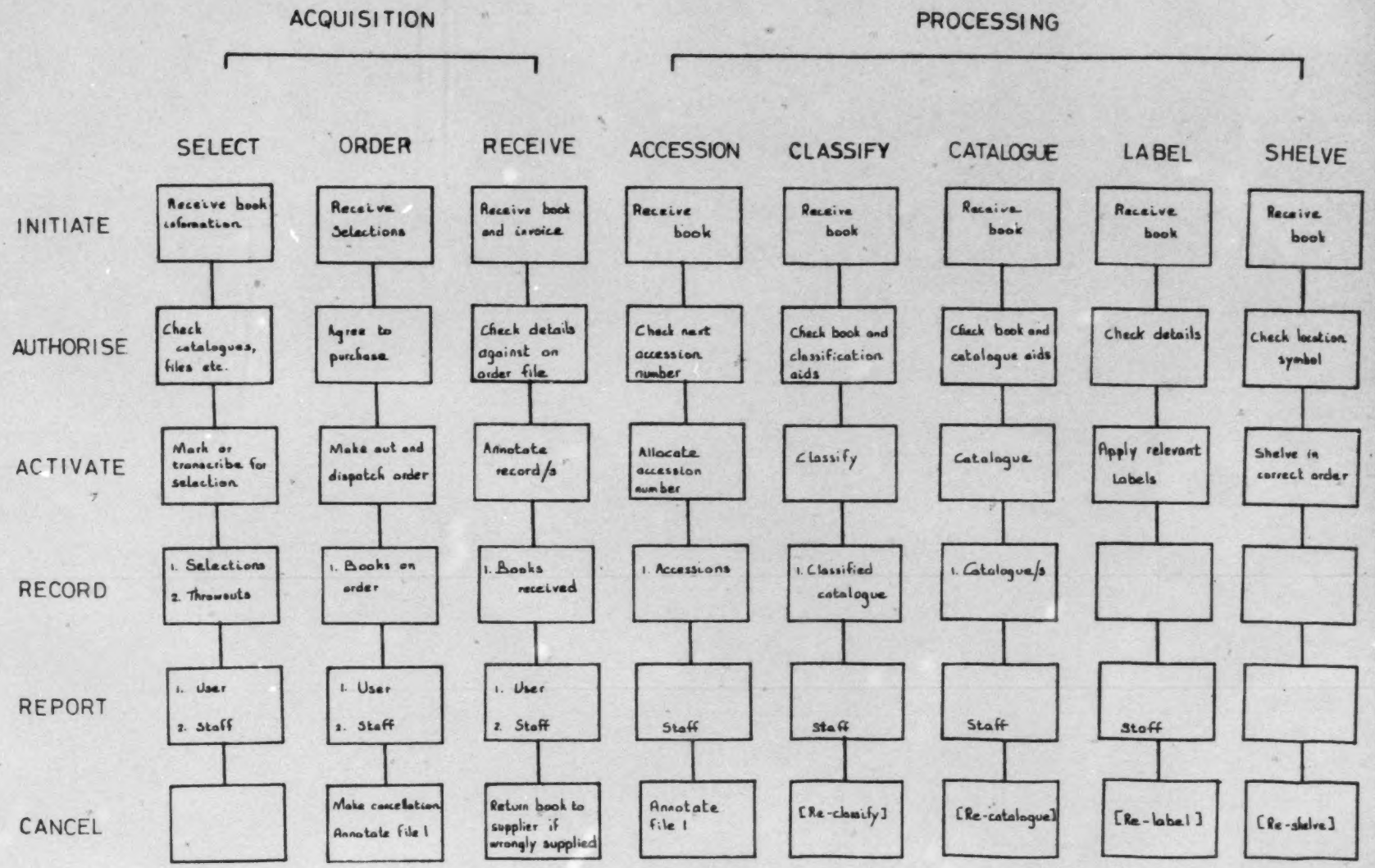
The major recommendations have been briefly listed in the Abstract that introduces this report. They have been developed at greater length within the context of their relationship to the total systems design. Within the complex and closely interrelated themes that underly the design and

operation of a libraries' system, each suggestion for action necessarily relates to more than one area of concern. It is because of this complexity, and because of the need in all types of organisation for an ongoing planning and development function, that I have stressed the necessity for supporting an analysis and research activity within the Technion Libraries System.

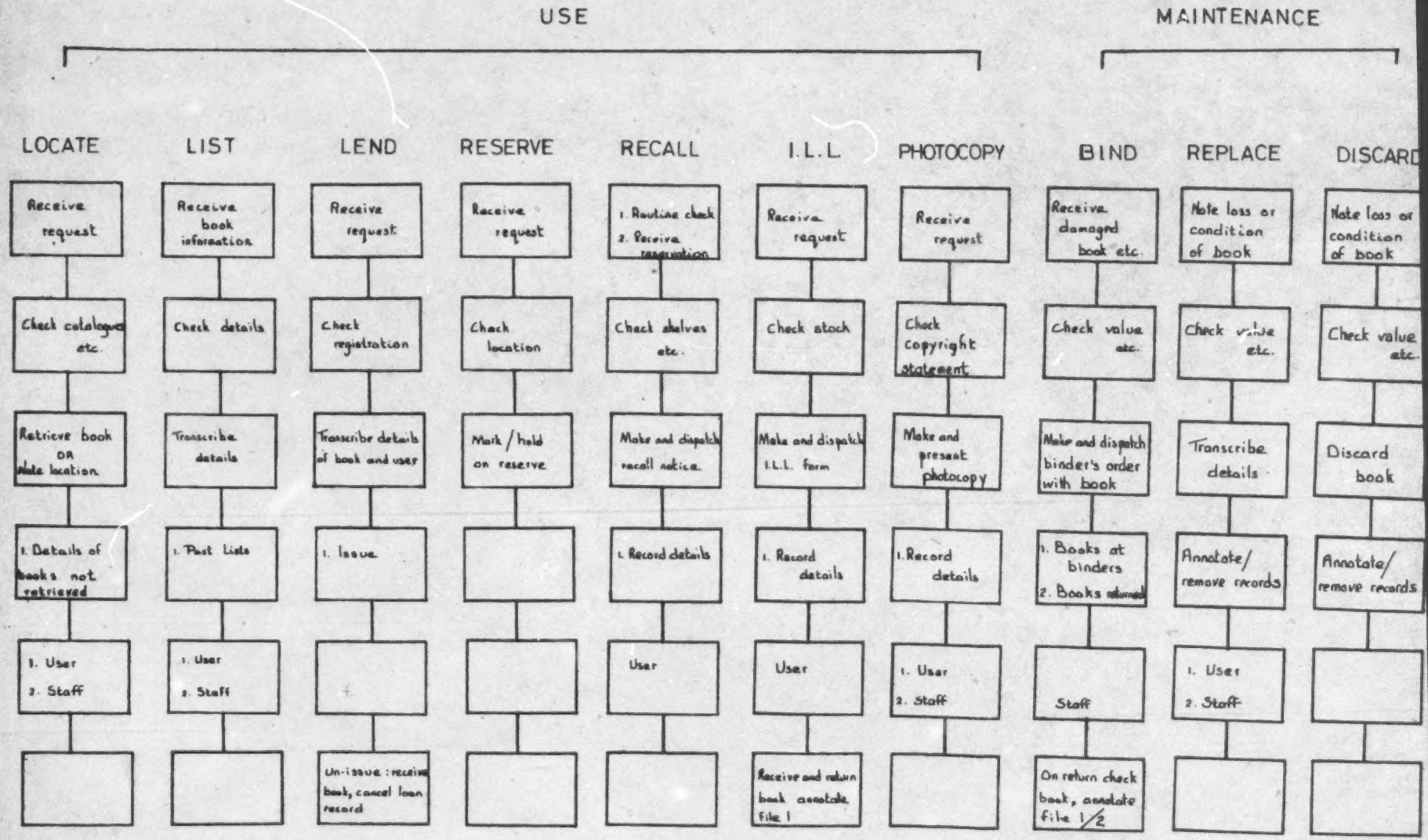
The immediate need for their talents and experience is in the design and implementation of computer-based acquisition procedures as the first step in developing an integrated computer system for the acquisitions, processing, information control and maintenance systems of the Technion Libraries. I.B.M. is sufficiently interested in the potential usefulness of such a system as to immediately offer some support for the design of a pilot project, and might be interested in complementing further Technion support for continued development.

For the Libraries to benefit from the potential usefulness of an integrated system, a continuing programme of development is essential. Even with the completion of the first stage, dealing with acquisition procedures, some impact will be made not only on the processing support activities the Elyachar Library offers to the faculties, but also in the provision of immediate current selective dissemination of information services to faculty libraries and staff. The progressive impact of incorporating cataloguing classification and loan activities would enhance present performance, and allow new services without the otherwise desperately needed increases in staffing. A summary diagram of the eventual impact throughout all areas of library procedures is shown overleaf, reproduced from the author's

"A Procedural Model for the Use of Bibliographic Records in Libraries" Aslib. Occasional Publication No.4.



50 **Procedural diagram**


USE
MAINTENANCE
LOCATE
LIST
LEND
RESERVE
RECALL
I.L.L
PHOTOCOPY
BIND
REPLACE
DISCARD
Receive request
Receive book information
Receive request
Receive request
1. Routine check
2. Receive reservation
Receive request
Receive request
Receive damaged book etc.
Note loss or condition of book
Note loss or condition of book
Check catalogue etc.
Check details
Check registration
Check location
Check shelves etc.
Check stock
Check copyright statement
Check value etc.
Check value etc.
Check value etc.
Retrieve book OR note location
Transcribe details
Transcribe details of book and user
Mark / hold on reserve
Make and dispatch recall notice
Make and dispatch I.L.L. form
Make and present photocopy
Make and dispatch binder's order with book
Transcribe details
Discard book
1. Details of books not retrieved
1. Print Lists
1. Issue
1. Record details
1. Record details
1. Record details
1. Books at binders
2. Books returned
Annotate/ remove records
Annotate/ remove records
1. User
2. Staff
1. User
2. Staff
User
User
1. User
2. Staff
Staff
1. User
2. Staff
Un-issue: receive book, cancel loan record
Receive and return book annotate File 1
On return check book, annotate File 1/2

The Analysis and Research team would also have a major part to play in helping to develop an integrated, coherent system from the present fragmented entities. This would also be facilitated by the adoption of a programme of organisational development based on the MRAP system of the American Research Libraries, but tailored to fit the situation here at the Technion, and would need the level of coordination that such a visit could provide.

In addition, they could be responsible for the implementation of other recommendations made in this report. These are included in the summary of recommendations which follows:

- that the experimental pilot project, partially funded by the grant made available through IBM, should address the development of an integrated computer-assisted library system by designing and implementing computerised acquisitions procedures

- that the Systems Analysis and Research team needed to carry out the pilot project, should continue to work on the development and implementation of the integrated system in planned stages, and should additionally be responsible for the implementation of the other recommendations in this report

- that the development of an integrated Technion Libraries System should be actively pursued and that organisational issues within the Elyachar Library and between this part of the Technion Libraries System and other parts (viz. Faculty and Departmental Libraries) be tackled within the framework of an analytic approach developed specifically for, or adapted to, library management, such as the MRAP (Management Review and Appraisal) programme of the Association of Research Libraries, Office of University Library Management in the U.S., OR Management by Objectives and Organisation Development techniques as implemented in English educational type libraries by the present systems analyst

- that existing links with other departments of the Technion, such as the Technion Foundation for Research and Development and the Center for Instructional Improvement, and the relationship between the Technion and its Library and Information Services be

strengthened, and improved by such endeavours as:

mounting an in-depth user study

taking immediate action on liberalising and rationalising loan policies

developing the existing Technical Information Service (on a paying basis), in particular exploiting and coordinating the present scattered subject expertise already available within the Technion Libraries System, in consultation with the Industrial Liaison Officer of the Mosad

extending the present innovative efforts at library education initiated by the tape-slide guide for library users under development with the C.I.I. staff, into a planned programme of education for all users, in cooperation with the C.I.I. and the Deans of the Faculties

inaugurating a planned programme of Library publications, in accordance with the functions and qualities of other Technion publications and using the experience gained in APL text processing not only in preparing these publications, but also in developing a pilot information service using the "Electronic Conferencing" techniques developed at the Institute of Technology, New Jersey, U.S.A. In particular, the renewed publication of the guide to Hebrew literature should be undertaken.

I have been helped in this study by the availability of previous reports on the Technion libraries, and would like to express my appreciation not only of the work that has been done in the past, but also for the unfailing helpfulness and cooperation I have received from their authors in discussions during the course of the Study. I have tried not to duplicate their work, nor to re-present the detailed quantitative analyses they have made - these are available should the information be requiired for specific operational implementations - but have found their insights and continuing interest in the provision of effective library and information services at the Technion both helpful and encouraging.

The reports I have referred to are listed in appendix no. 3,

together with references that have been quoted elsewhere in the report.

As a systems analyst and ex-librarian, I can do no better than to repeat the President's comment in the latest report: "The Technion can best fulfil the vital mission which it must perform in Israel if we are demanding of ourselves and seek every opportunity to raise our academic standards and improve our services", and hope that in endorsing the recommendations made here the Technion Libraries System and its staff may be allowed to contribute fully in this endeavour.

APPENDIX 1

PROPOSAL FOR A SYSTEMS STUDY OF THE TECHNION LIBRARIES.

The problem:

The need to make the most effective use of limited resources in providing library and information services to the users of the Technion Libraries.

Background:

The local and national needs are such that effective library services are essential to obtain, record and disseminate the information required to survive and to progress in this technological age. The growth of the world's literature in science and technology; the rapid advances in every scientific field; and the increasingly onerous economic pressures make the application of the scientific approach to the communication of knowledge a project of primary importance. Professor Ackoff's study for the idealized design of the scientific communication and technology transfer system in the United States indicates the importance the Governmental funding agency assigns to ensuring both effective and efficient use of the resources available, and the urgent necessity they feel for planning and developing our organisations to achieve this.

Other indicators of the potential value of systems' analyses of library and information centres abound. There is much attention and effort focused on introducing and adapting such management techniques as Planned Programmed Budgeting Systems, Management by Objectives, Organisation Development, Management and Staff Development Programmes, and the introduction and development of computer based techniques and management information systems.

Experience gained from these studies emphasises that it is the process of design, the communication within and between the various groups of people, the shared values, ideals and commitments to action that can clarify what we want from our systems, and help to release creative solutions to the problems we may meet in trying to achieve our agreed objectives. There is no one right answer, no panacea for all organisational ills, but we have the knowledge and the

technology to exploit the similarities between systems and between classes of systems, for the solution of problems in the unique and individual situation each organisation, and network of organisations, presents.

THE OBJECTIVES OF AN ANALYSIS OF THE TECHNION LIBRARIES AT THIS TIME WOULD THEREFORE BE:

1. a clarification of the objectives of the Technion Libraries within the Technion, and in relation to the Israeli national library and information scene.

2. a definition of the appropriate structure, organisation and methods to achieve these objectives (including an examination of the place of the computer and other technological aids developed for use in library and information systems in contributing to the achievement of these objectives).

Method:

a) Re-definition of the overall objectives of the Technion Libraries in relation to the overall objectives and future plans of the Technion as a significant national information resource, by consultation with those responsible for such statements.
N.B. Much work has already been done, both on the role of the Library, and the future of the Technion, and discussions with those responsible for these reports, and for future plans is a prerequisite to any formal statements of the Library's objectives and range of priorities that can be used as a basis for the systems study.

b) Review of alternative strategies and designs for achieving these objectives, including a summary of the experience gained in other library and information systems, and what models, strategies, structures and technological devices are available for consideration.

Examples of such approaches include:

THE APPLICATION AND ADAPTATION OF MANAGEMENT PRINCIPLES AND PHILOSOPHIES developed for other parts of organisations, such as MbO, PPBS, project planning
THE APPLICATION OF ORGANISATION THEORIES concerning networks, functional versus matrix organisational

structures, the team approach, centralisation versus decentralisation
PROCEDURAL ANALYSES aimed at rationalisation of internal work processes
COMPUTER FEASIBILITY STUDIES, the use of the computer in acquisitions, cataloguing and issue systems, integrated systems such as DOBIS, (DOrtmund BIbliotheks-System), or the programmes developed for the I.C.L. Library package in England, the use of MARC tapes, union catalogues and union lists of periodicals
THE USE OF MICROFORMS AND AUDIO-VISUAL AIDS to education and the dissemination of information.

c) Development of the Commitment package for Action, or the Master Plan. The systems study report would present statements of agreed objectives and details of alternative designs aimed at achieving these objectives, as indicated above, with notes on the relative benefits and costs of the alternatives recommended, and the resources that would need to be invested in adopting them. It would also include a definition of the criteria for choice of an integral demonstration module that could be implemented as an indication of the potential benefits of the chosen system design, and to provide feedback information necessary to plan a full scale implementation.

ELEMENTS OF THE DESIGN PROCESS:

A procedural analysis of the present information flow within the library would not only provide a basis for the consideration of improved methods, including the possible contributions of mechanisation, but would also provide a manual of in-house routines as training aids for new staff and a record for evaluating future progress. It should indicate which areas of activity might be most usefully chosen for demonstrating the implementation of a key module of the overall plan.

Specific applications that could well be implemented, and have indeed been suggested in earlier reports by Ing.Kohn and Reuben Karni, include the following:

the automation of the topic catalogue in Hebrew;
a periodicals control system;
indexes via terminals or punching machines;
a budget supervision system;

Other areas for consideration could include:
ordering and budgeting for the acquisition of monographs;
a short title catalogue of books issued on loan to students and staff, which could later be extended to incorporate new acquisitions;
a mechanised issue or loans system, that could be linked with the registration of students.

Definition of the criteria for choice of the implementation module would include such elements as: organisational constraints, budgetary considerations, time-tabling, users response, staff response.

An important aspect of the project could be fulfilled by a Consultative Committee that could be responsible for steering its progress, both in giving guidance on and consideration to any interim reports, and also monitoring possible progress towards implementation, in relation to the overall timetable.

POSSIBLE STRUCTURE OF THE CONSULTATIVE COMMITTEE:

Chairman: Professor Ralph Simon, Director of the Library
Professor Shamir, representing the Vice-President's Office for Academic Affairs
Ing.Kohn
Dr. Doron Cohen
Dean Yadeen
Professor Dov Katz

Unless a work system is completely automated, it is a man-machine system, and is unlikely to function effectively unless this fact is recognised and designed for. Information must be made explicit for computer manipulation, but the use of information still depends on human interpretation. I would therefore emphasise that a very large part of the work will necessitate interviewing and talking to the staff of the Technion Libraries, as well as consultation with staff from other interested Departments. The progress of the project is therefore dependent on their cooperation and goodwill, and the tentative timetable may need to be amended to correspond with their information and advice, and with the resources actually available. I would also like to express my appreciation of the helpfulness and consideration I have met with in my preliminary talks.

Pauline A. Thomas

March 1976.

APPENDIX 3

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ABBREVIATIONS

APL	A Programming Language
CII	Center for Instructional Improvement
CPU	Central Processing Unit
DOBIS	Dortmund Bibliotheks-System
MARC	Machine Readable Catalogue
MbO	Management by Objectives
MIT	Massachusetts Institute of Technology
MOSAD	Technion Research & Development Foundation
MRAP	Management Review and Analysis Programme
O.D	Organisation Development
PPBS	Planned Progrmmed Budgeting System
PTR	Purpose Targets Results
UDC	Universal Decimal Classification